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Northrop News

Issued Every Two Weeks at Northrop Field, Hawthorne, California Wednesday, December 3, 1947

WITH EYES LIKE A CAT

The News, in answer to many and repeated requests, presents the story of the functioning of the RADAR equipment carried to battle by the Northrop Black Widow—see pages 3, 4, 5, 6.

Santa Claus to Visit NRC Juniors

By the NRC REPORTER

Northrop Juniors in legion and enmasse will converge on the Plant One stage area December 20 at 2:00 p. m. in the afternoon, a Saturday.

There they will be greeted by a jolly old gentleman from the north pole, Saint Nicholas, Santa Claus, who will have arrived shortly before at Northrop Field after a direct flight from the top of the world.

Santa will have with him all the necessaries for a great Northrop NRC-sponsored Junior Christmas Party. It has been reliably reported to the NRC Reporter that his bags will be stuffed to the bursting point with candy and gifts which will be handed out during the afternoon to all sons and daughters of Northrop personnel who attend the party.

Assisting Santa as always during the Christmas parties of past years, will be the famous clowns "Bobo" and "Popo." Also on hand to make this special occasion even more special, will be a professional troupe of performing dogs and seals whose antics will surely delight the hearts of each and every youngster there.

Another extra special attraction will be the NRC Flying

(Continued on page 2)

Northrop to Address Foremen

Northrop Foreman's Club has gone "all out" to climax the 1947 series of meetings, it has been announced by Bob Phillips, NFC president. On December 5, Friday, at 6:30 p. m., Foreman's Club membership will convene at Scully's Restaurant to hear Northrop President John K. Northrop in an address on the Northrop production outlook for the coming year.

Second speaker on the agenda will be Northrop test pilot Max Stanley, who piloted the Northrop YB-49 Flying Wing, eight-jet bomber on its maiden flight to Muroc air base. Stanley, it has been announced, will cover particularly the comparison of flight characteristics between the propeller-driven XB-35 and the 32,000 horsepower jet-driven YB-49. This talk, as a complement to the previously Northrop News published flight report by YB-49 flight engineer O. H. Douglas, will give listeners a realistic picture surpassed only by actual flight.

Third speaker for the December 5 meeting will be Northrop test pilot L. A. "Slim" Perrett, who will address the gathering on the details of flying escort to the Flying Wing tests.

Foreman's Club members who have not as yet made reservations are urged to do so immediately. Call Personnel Activities, Station 637 or communicate with any Foreman's Club officer.

SECOND ANNUAL YEAR-END HOLIDAY STARTS DEC. 24

Ski Club to Rendezvous In Sierras

The Northrop NRC Ski Club will journey to Glacier Lodge in the High Sierras on the days of December 27, 28 and 29 for the second annual Ski Club, High Sierra rendezvous, it has been announced by Cecil Cruzon, NRC Ski Club commissioner. Scheduled during the Christmas holidays, some 30 or more Northrop ski enthusiasts will rendezvous for dinner at the outset of the meet at Glacier Lodge on the night of December 27.

During the 3-day meet there will be at the disposal of the club a 1500-foot and a 500-foot ski tow and a ski school, sponsored by the Lodge and under the direction of that old ski maestro Frankie Stevens. Skis may be rented at the Lodge and Commissioner Cruzon adds the note that the ski hill and tows are within easy walking distance from the Lodge.

Events for the rendezvous include NRC-sponsored ski races for men and women with NRC trophies to the winners, dancing, singing of the old songs around the fireside in the evening and

(Continued on page 7)

YEAR-END VACATION TO BEGIN AT END OF SHIFTS DECEMBER 24, CONTINUES THROUGH JANUARY 4

Eleven days of uninterrupted Christmas holiday for all Northrop personnel, beginning at the close of shifts, December 24, and continuing through January 4, has been announced by Northrop Vice-President and General Manager, Claude N. Monson. This second Northrop year-end holiday has been arranged so that all personnel may spend Christmas Eve with their families and continue the holiday unbroken through the first 1948 week-end.

The following vacation schedule has been established:

For the work-day, Wednesday, December 24:

First shift factory personnel report to work 7:00 a.m., quit for the holiday at 12:00 noon. Office personnel—8:00 a.m. to 1:00 p.m. Engineering — 7:45 a.m. to 12:45 p.m. Night shift factory, office and engineering —12:30 p.m. to 5:30 p.m.

The 11-day year-end vacation will start at the close of shifts December 24. Work will be resumed by both shifts at the usual starting times on January 5.

Hourly-paid personnel, not on leave, will receive 48 hours straight time pay, the total of six full paid working days. This is an increase of one full day paid vacation over last year.

Norcrafters would normally return to work on Friday, January 2. However, to permit the full uninterrupted 11-day holiday the entire personnel worked the Saturday after Thanksgiving to make up for Friday, January 2.

Pay check distribution schedule to hourly personnel is as follows:

Checks for the week ending December 14 will be distributed December 19.

Checks for the week ending December 21 will be distributed December 23.

Checks for 48 hours of year-end vacation pay will be received December 23.

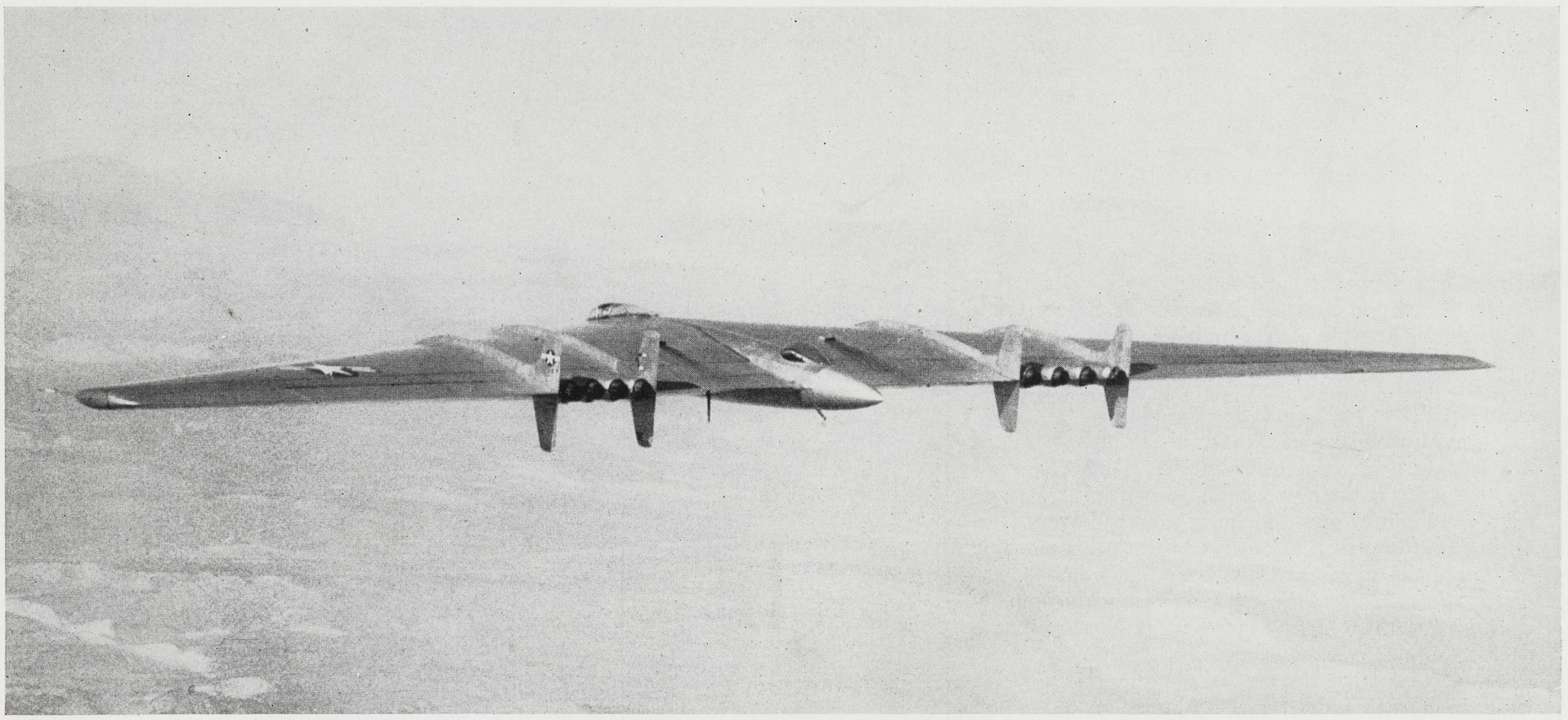
Checks for December 22, 23 and 5 hours on December 24 will be received on January 9.

The first regular pay check after the holidays will be issued January 16 for the week ending January 11.

Salaried personnel will be paid on the usual dates.

Happy Vacation!

Northrop YB-49 Eight Jet Flying Winq Bomber



THE NORTHROP YB-49 EIGHT-JET BOMBER cruises at twelve thousand feet over Muroc Army Air Base on recent routine test flight. The big bomber is now undergoing a series of extensive flights as part of the test program launched immediately after first take-off, from Northrop Field, on October 21, 1947. The YB-49 is the world's most powerful airplane. It is a jet propelled counterpart design of the propeller-driven XB-35s. A second YB-49, soon to be completed will take to the air shortly after the first of the year. The YB-49s follow the well established pattern of the tailless swept-back all-wing designs set by Northrop during the twenty-year Northrop Flying Wing development program. Swept-back Northrop Flying Wings were first flown in 1940 with the successful development of the Northrop N1M—prototype of the present Flying Wings. Other Northrop swept-back wing aircraft flown successfully include the rocket-powered glider (1944) and the jet-powered prone fighter, the XP-79 (1945).

Northrop News Editorial ---

Your Safety Is No Accident!

Aircraft workers, and Norcrafters in particular, work at one of the safest livelihoods in American industry. Aircraft manufacturing received an industrial injury average (disabling injuries) for the second quarter of 1947 of 4.4 accidents for every 1,000,000 EMPLOYEE HOURS WORKED, it is reported by the U. S. Department of Labor in a recent communication to all manufacturers concerned.

This figure of 4.4 bested the national average for that period by 11.3 accidents per 1,000,000 employee hours worked. The aircraft industry was exceeded in safe work conditions by only three industries; synthetic rubber with an average of 1.9 accidents; electric lamps (bulbs) with 2.6 accidents and synthetic textile fibers with 3.1 accidents. The 119 industries reported on by the U. S. Department of Labor cover the American industrial field completely from saw mills to women's and children's clothing. We airplane builders may take pride in saying that we beat them all with the exception of three in regard to the value we place on life and limb while going about our daily tasks.

This was not always so. During the nineteen thirties aircraft's disabling injuries totaled 18 per 1,000,000 man hours worked. The first year of the war the average was 12. During the war years the figure was reduced to 6. Figures for the nineteen twenties in aircraft building are not available.

SAFETY IN BUILDING AIRPLANES, LIKE SAFETY IN FLYING AIRPLANES, IS OUT OF THE BARNSTORMING DAYS.

Northrop's safety committee is made up of top management, supervision and factory personnel totaling 24 members. With the exception of management, committee members are rotated every two months to afford greater overall personnel participation. The management safety committee is permanent. Chairman is Northrop Vice-President and Assistant General Manager B. G. Reed. Other management members are: John B. Clark, director of Industrial Relations; Jack Naish, director of Materiel; Edmund Burke, chief of Plant Protection; C. B. Spencer, plant production superintendent; Gene Musk, plant engineer and John Breneman, superintendent of production, nights. Northrop's permanent full-time safety engineer is Lee B. Johnson.

Meetings are held on the third Thursday of each month, during which management, supervision and shop personnel members of the committee are called upon individually for reports concerning safe working conditions in their respective areas of operation. The meetings run smoothly and are well ordered. Every man has his say, and reports on apparent unsafe working conditions are taken at face value. Investigations are promptly made and corrective steps are immediately taken. Perhaps the greatest single contributing factor toward the success of Northrop's Safety Committee is the attitude of Northrop's supervision. These men, although bound to production schedules and cost budgets, are quick on the trigger to call the turn on any hazardous condition within the plant.

The 24 members of Northrop's safety committee are hard-working and conscientious. Your life and limb security is their particular responsibility. However, the chain of safety includes each and every Norcrafter from the man who came to work this morning to the old timers of the Hawthorne Hotel days—Northrop Aircraft, Inc., headquarters during company organization. The highest members of Northrop management assume equal responsibility with each and every classification bracket within the factory. We work in a safe industry, the figures quoted above prove that. However, there is no resting on laurels where safe practices are concerned. A safe record accomplished and a safe record to be won remains, after all, the distinct responsibility of each and every one of us. *You and I, your co-worker and mine.*

Northrop Safety Committee Meets

NORTHROP'S SAFETY COMMITTEE MEETS—Norcrafters above are one of the main reasons why Northrop Aircraft stands well up in the safe work condition percentage lists of the aircraft industry. Composed of management, supervision and shop personnel, the committee meets twice a month to report and to remedy any hazardous working conditions reported within the plant. (The editorial adjoining explains the secret of their success.) They are from left standing: Carl Hoffman, Robert Catlin, Earl Ruger. Seated around table, clockwise, Wayne Masterson, John B. Clark, Bruce Myers, Nelson Williams, Tom Kennedy, Edward Cunningham, Harold Dils, Les Strong, Eugene Dilley, Gene Musk, Jack Naish, Ole Omley, Lee Johnson, Charles Davis, Marshall Nelson, Robert Chambers, Jack Briggs. Far right, M. L. Sibert, Carl Liedtke.

Facts About Insurance Outlined

Norcrafters who carry hospitalization coverage under the Group Insurance plan are allowed the amount of $75.00 as maximum medical reimbursement for any one illness, payable after the first two calls. Pay schedule is $3.00 for home call and $2.00 for doctor's office call.

However — to realize benefits, Group Insured Norcrafters should adhere to the following procedure: Claims to establish your illness for insurance benefits must be filed with the Insurance Section at the Personnel Office within 20 days of the doctor's first call. When you have recovered from your illness or accident and have been released by your physician, in order to receive full benefits, final bills should be submitted within the six month period immediately following your doctor's final call.

If Group Insured Norcrafters adhere to this procedure, no difficulties will be encountered in receiving insurance benefits.

We also wish to call attention to the following services which are not paid for under the Northrop Group Insurance plan:

Dental X-rays or dental work.
Drugs, dressings or medicines.
Eye examinations or fitting of glasses.

More than one call on any one day.

TWINS, BY GOLLY, BY GOLLY!

Word comes to the News office that Department 25's John C. Postel and wife are the doubly proud parents of twins, Lois Ann and Susan Diane. The little ladies were born at the Rose Hospital. Weights were 4 pounds 9½ ounces and 5 pounds 6 ounces respectively. Arrival times—6:15 p. m. and 6:20 p. m., also respectively.

Congratulations, congratulations!

Ticket Service Assists Show-going Norcrafters

The Personnel Activities' theatre ticket service is proving to be a popular convenience for Norcrafters, it has been announced by Personnel Activities Manager Charles G. Boyle.

The service covers every reserved seat theatre and entertainment attraction in the Los Angeles area. Some 24 attractions are listed for December alone. Should Norcrafters want to attend the Padua Hills theatre attraction, the Theatre Mart or the Philharmonic, the simple proceedure entails a call at Personnel Activities office either in person or by your department clerk, and a deposit of the money required. Seat are assigned then and there and the theatre-goer has only to pick them up at the box office at show time.

This service is available to all Northrop personnel.

Norcrafter E. H. Babel Assists in Compiling U S Spline Standards

Northrop Engineer, E. H. Babel, of the Standards Group, has taken part in the recently completed task of establishing 30 degree involute spline specifications for the National Association Standards Committee, it has been announced by the Aircraft Industries Association. The specifications will now become standard for American industry. Babel's co-worker on this project was C. E. Plouff of Boeing Aircraft. The information was compiled under the direction of J. F. Cramer, Boeing Aircraft, chairman NASC Project Subcommittee.

The involute spline specification standards present to the American manufacturing industries for the first time a complete work on this subject. The specifications, developed by Babel and Plouff and based on aircraft industry requirements, and in addition to receiving industry endorsement by NASC, have been sanctioned and approved by the American Standards Association of the Society of Automotive Engineers. The specifications for the first time permit complete interchangeability of parts. The work is considered to be a major addition to American mechanical practice.

Babel is a four-year Norcrafter.

Santa Claus

(Continued from page 1)

Wing Chorus, making their official debut. Numbers they have been rehearsing for the occasion include Silent Night, White Christmas, Adeste Fidelis and Jingle Bells. Ice cream for all will certainly not be the least of the attractions.

Plant Gate Number 4 will open promptly at 2:00 p. m. on this memorable Saturday, so let's all be there good and early so as not to miss any part of the show.

Northrop News

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JOHN B. CLARK, Director

CHARLES BRADFORD, Editor

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NORTHROP P-61 BLACK WIDOW NIGHT FIGHTER, from image on viewing screen as shown at left, traps enemy in RADAR web — closes for kill. Range is 4000 feet.

WITH EYES LIKE A CAT

By Aireporter

(Prepared with the approval of the Public Information Division of the U. S. Air Forces, Washington, D. C.)

It was a cold day at Northrop Field. A chill wind blew down the mile-long runway. Low heavy clouds scudded in from the ocean. Winter had arrived early in California during that year of the war, 1943.

On this day, three Northrop contract pick and shovelmen, coated and scarved against the weather, set to work "planting" a telephone pole on the edge of the flight ramp. They worked near a small, newly constructed building that had queer bulging windows and a medley of spooky whirring noises going on inside. An armed guard stood jealous watch over the single padlocked entrance, admitting personnel only after close and detailed scrutiny.

As far as the workmen were concerned, it was ideal "digging" weather. They worked steadily at their task for half an hour, then, suddenly they began to glow with a strange inward heat. This sensation of being overheated from exertion was followed immediately by free and spontaneous perspiration on the part of all three.

The wind still blew. The clouds were still there. It still "looked" like a cold day. The men stopped and frowned at each other. Bandanas came out to mop damp brows. Coats came off.

What sort of "unusual" California weather was this? It was supposed to be cold—it looked cold, and that sea wind had been cold a short minute ago. Yet here they were in undershirts mopping perspiring brows.

Puzzled looks spread over their faces—they looked furtively at each other. Had they suddenly been bewitched?

Bewitched indeed—.

Inside the nearby building on benches facing the bulging windows, a scene was being enacted that would put the most enterprising witch in the history of good old Salem to shame.

Each bench held a whirling dervish of a dish-shaped antenna, and each antenna, through the intricate equipment attached, was in the process of smashing blasts of electric radio waves through the windows and out into the air beyond. These waves traveling at 186,000 miles per second, the speed of light, crashed in part against the bodies of the workmen, penetrated their clothing, skin and flesh and piled up against their bony structures to rebound in so many millions of invisible counter "echo" waves.

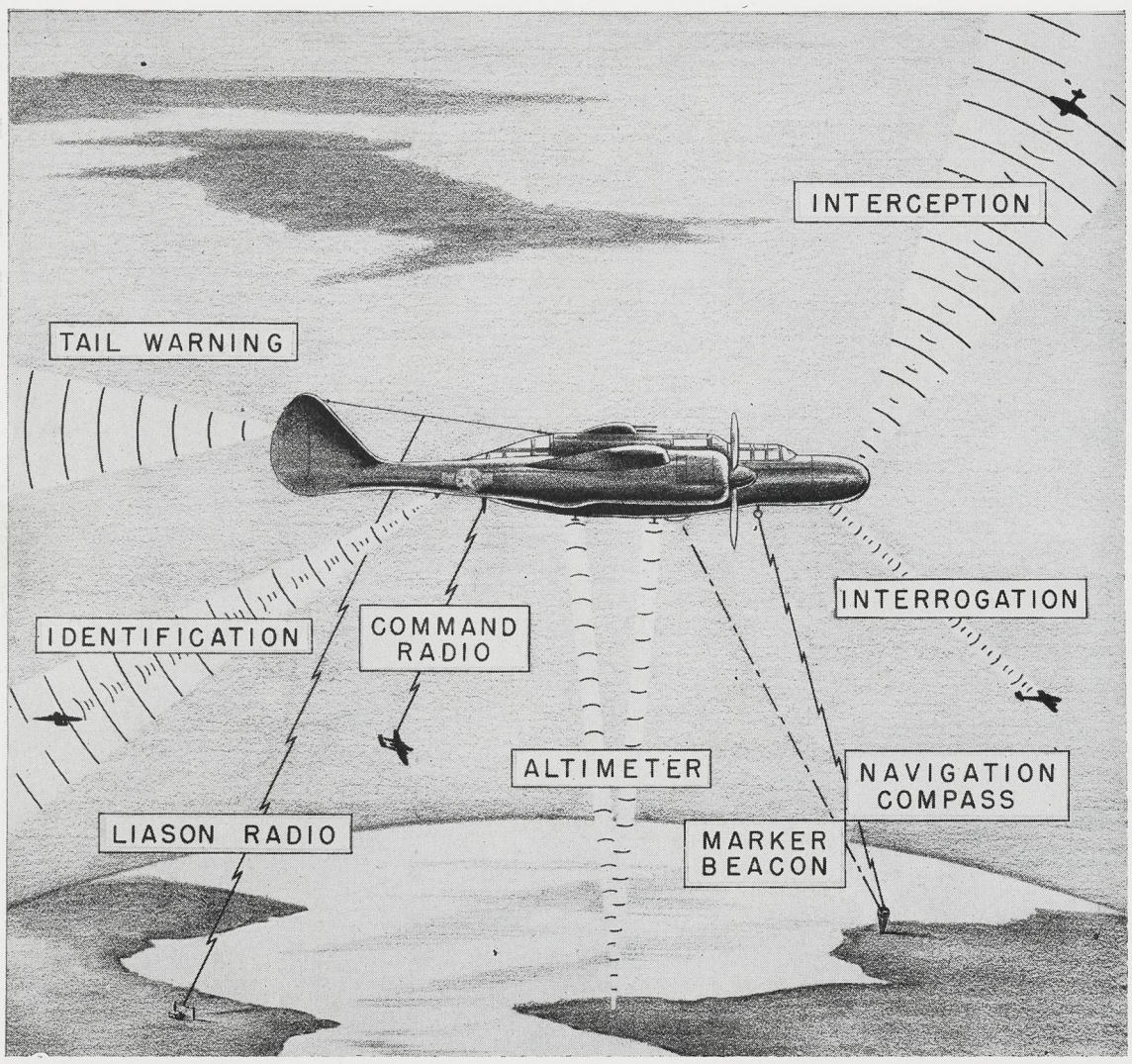
BOMBARDMENT

This bombardment certainly made the workmen "hot," and that they happened to be in the way of the blasts was purely coincidental. The rays were harmless—production emergency for RADAR sets for Northrop's Black Widow night fighters was on—the project was top secret. Under the circumstances, however, the men were, of course, more than willing to undergo a little artificial summertime for the sake of battles won and lives saved.

The RADAR sets were being "zeroed" in with Western Avenue's gas storage tank as a target.

The echoes from the men's bodies and from the gas tank and from the Baldwin Hills be-

(Continued on next page)



NIGHT FIGHTING BLACK WIDOW carried five RADAR devices—interception, interrogation, altimeter, identification, and tail warning—the literal five senses of night air battlers. Varied instruments were largely war-perfected — are now fast proving peace-time airline adaptability. Ships at sea also find radar invaluable navigation aid.

(Continued from preceding page)
yond returned to make images or "blips" on the RADAR viewing screens—screens much like a photographer's ground glass focusing screen.

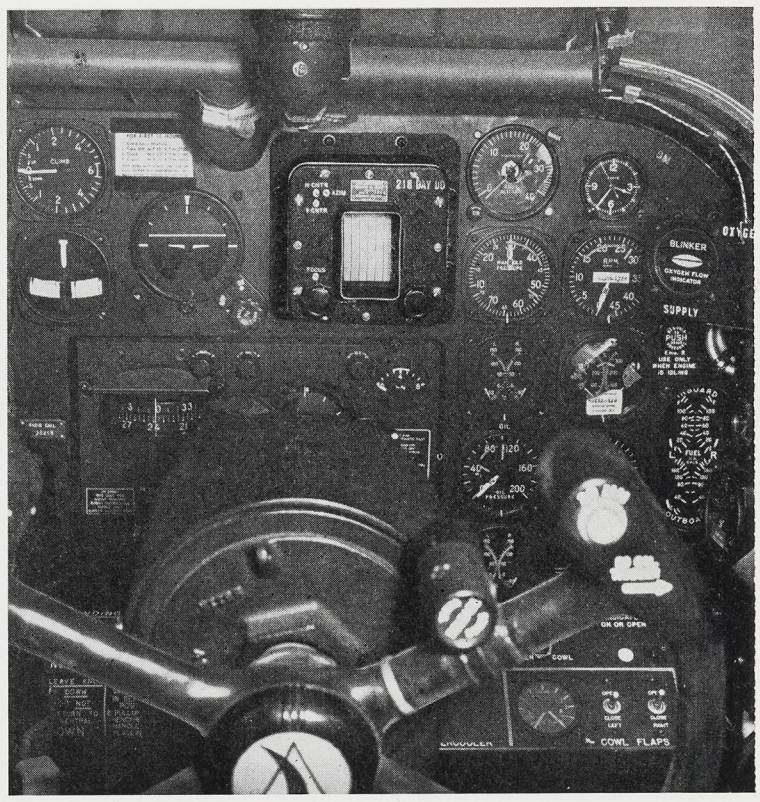
This was RADAR under production assembly at Northrop —it was the same wonder device that detected clouds of Jap fighters approaching from the sea on the morning of Pearl Harbor—that even then was enabling our fighting forces to see in the dark—to detect ships behind cloud banks and to see mountains over a hundred miles away on a foggy morning.

WHAT IS RADAR?

What is RADAR — what makes it work? Max Fayreweather, Northrop top electrical production man, sums up by saying — "Imagine a game of radio handball with the players constituting a projecting and receiving antenna and where the ball is a whole fantastic series of radio waves traveling a speed beyond human conceivability to any target or obstacle projecting above surrounding terrain or in the sky, and bouncing back again to project a pattern image on a calibrated viewing screen. That's RADAR in principle, and to an elementary degree, that is also RADAR in theory."

Northrop's first contact with RADAR came one year before Pearl Harbor on December 16, 1940, when Air Forces authorities at Wright Field, outlining the latest advances in British RADAR, explained to John K. Northrop, Northrop Aircraft president, just what in the way of aircraft and equipment would be needed to successfully prepare for combative night bombing raids in case we eventually became involved.

Subsequent to this in January 1941, Northrop Aircraft's second introduction to RADAR occurred when Walter Cerny, Northrop director of engineering, was invited to attend a symposium on RADAR under the auspices of the Army and Navy at Massachusetts Institute of Technology.



PILOT IN P-61 "office" could look down enemy's throat at four hundred miles an hour in the dark. RADAR viewing screen that duplicated search picture obtained by radio operator, is top center. Gun button is on control at right. Instruments at night visible only under special black light.

The mock-up submissions on America's first specifically designed night fighter, the Black Widow, were accepted by the Air Forces on April 23, 1941. This airplane would do the job. It was equipped to literally see attacking bomber squadrons in the black of night. It carried sufficient fire-power to shoot down the biggest enemy bomber then known with a single well placed burst.

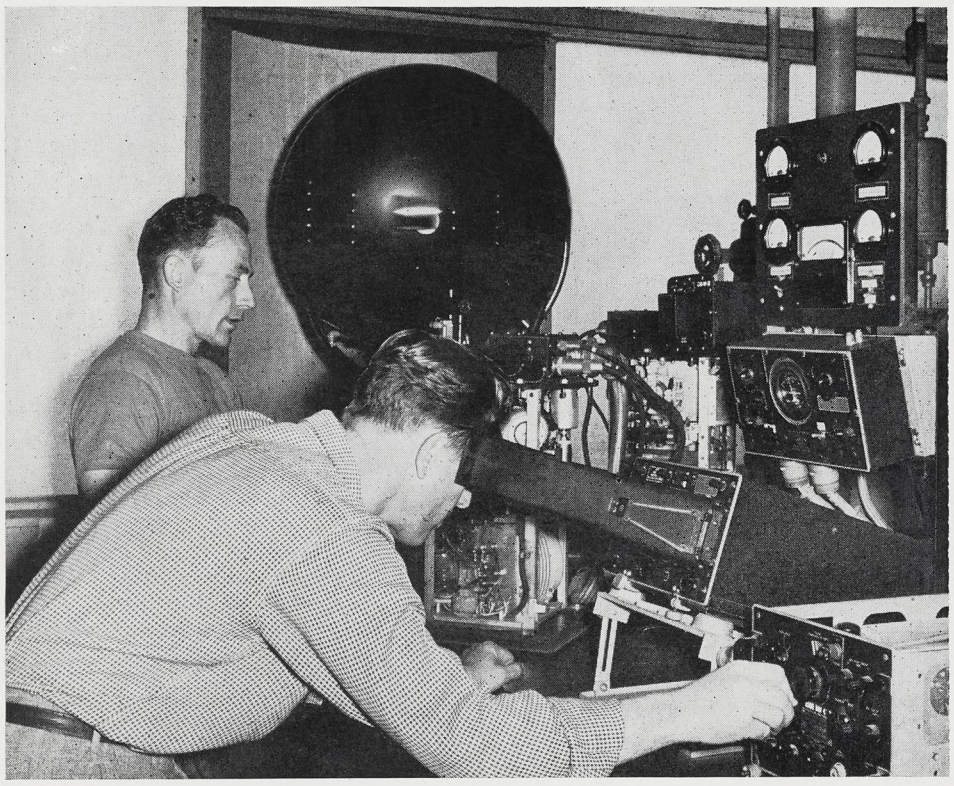
DEADLY AIRPLANE

The P-61, as a consequence, was an airplane designed around a long, beautifully streamlined nose and a deadly paunch. The nose contained the RADAR equipment, including the whirling antenna, and the paunch housed the four long 20-mm. cannons. Also, a cluster of four fifty calibre guns rode in a revolving turret that could be fired by any one of the three man crew.

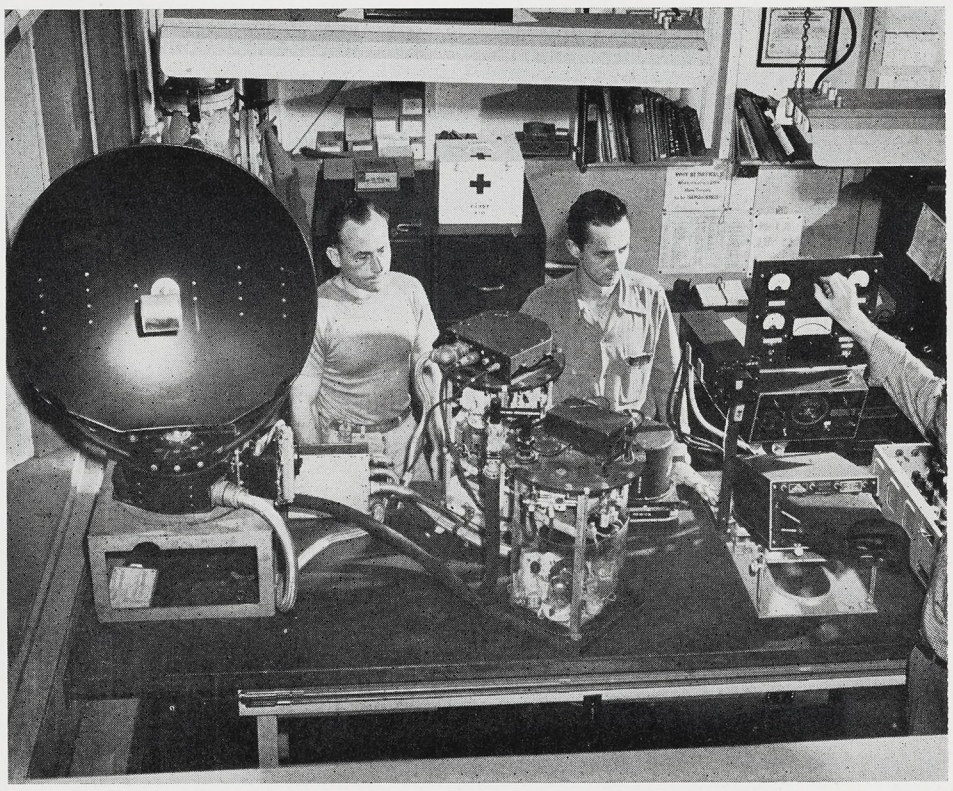
Northrop P-61 Project Engineer Fred Baum, a top-notch airplane builder, became, in addition, a RADAR expert overnight. P-61 drawings were fed to his desk by the ream. The mock-up was passed successfully by the Army and the airplane began to take shape. The clouds of war were darkening.

During the one year interim between AAF go-ahead and the XP-61 test flight with the noted pilot Vance Breese at the controls, Northrop's mysterious and heavily guarded "RADAR shack" came into being. The sets were received from Western Electric and assembled for installation.

The Black Widow, the first war-designed airplane, came into her biggest share of eventual action in the Japanese conflict. Night patrols soon erased the spectre of Japanese night bombing attacks on American expeditions, naval installations and storage areas.

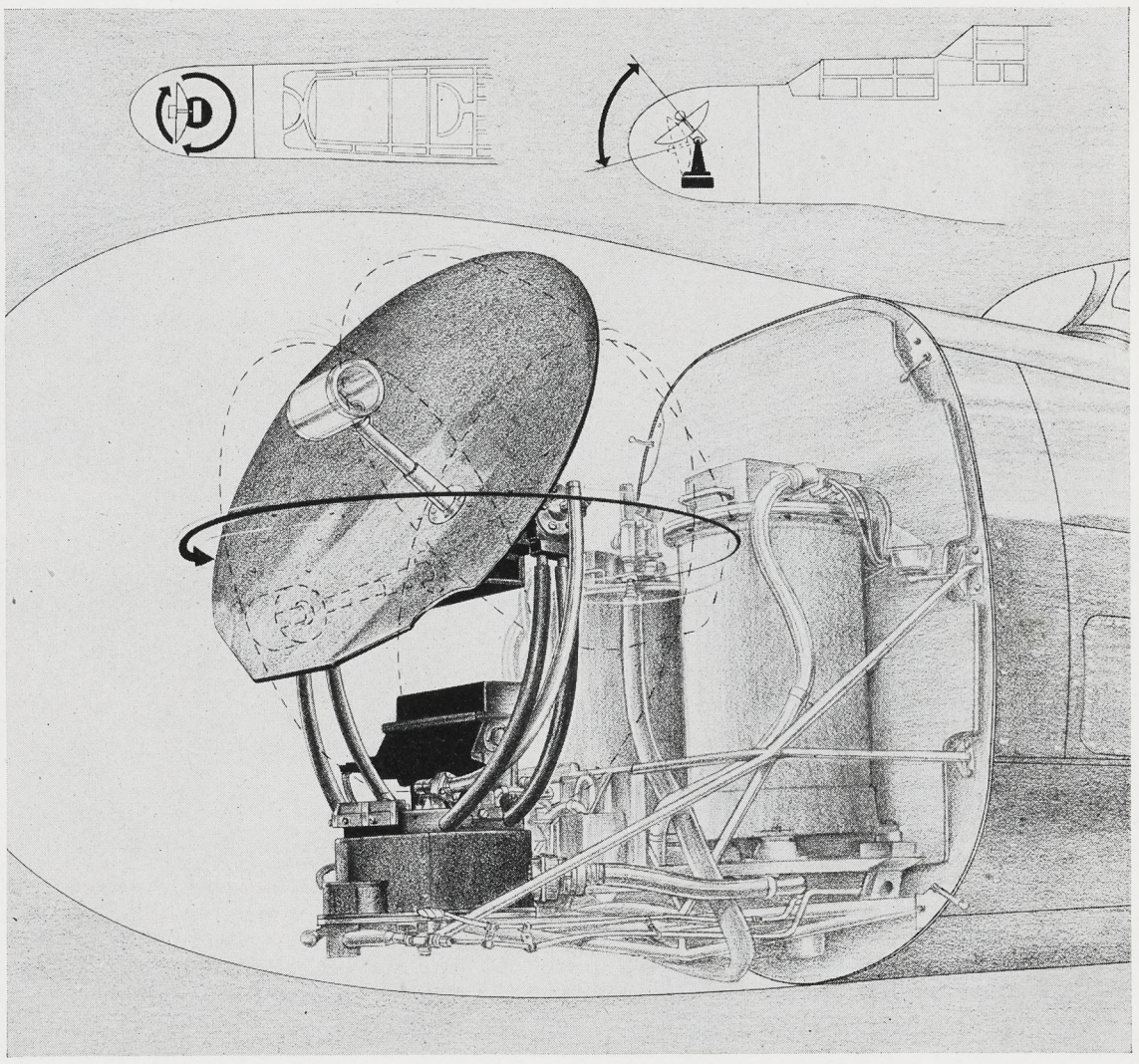


GLENN WILLIAMS AND SAM CARTER operate bench mounted RADAR set. Photographer caught antenna revolving slowly. Each set was assembled under serial number and checked thoroughly before and after installation. Scope picture Carter sees is long range view of area north of Northrop Field, shown on page six. Antenna glow is film radar phenomena.



NORTHROP RADAR TECHNICIANS Glenn Williams, Don Woodward and Sam Carter (at edge of photo) "check out" Western Electric SCR-720 equipment for standard installation in Black Widow. Antenna is at left. Control board at right. Transmitters, center, were pressure-housed in aluminum castings to prevent arcing (shorting out) at high altitudes.

NORTHROP P-61 BLACK WIDOW. This view of a newly completed wartime Widow shows plainly the long streamlined nose that houses the radar antenna—radio operator's compartment is under the rear enclosure. Equipment enabled him to track down enemies, shoot guns as well.



THAT LONG BLACK WIDOW NOSE CARRIED RADAR equipment to battle. Artist shows antenna in action—a literal whirling dervish. Upper left shows horizontal circular movement—right, vertical search. Equipment was compact, rugged and efficient —withstood rigors of war and all the climates the world offered from poles to equator.

Pilots with P-61 flying time and fighting time, soon returned to the States to tell their stories and sing their praise of how the Northrop fighter with "eyes like a cat" "took care" of things. One man, Major Carroll Smith, to an audience of newsmen at the Los Angeles Biltmore, quoted the prize example of P-61 efficiency at fighting in the dark. On this one night of Widow "stooging," the Major shot down four enemy planes, and he got home in time for breakfast—.

BLOW BY BLOW

Blow by blow, it happened this way—.

One night in early January, 1945, at Mindoro in the Philippines, the Major and his RADAR man, a Lieutenant Porter, in their Black Widow "Time's A-Wastin'," went out to cover a convoy. A fighter director ship informed him there was a plane about 10 miles away at 8000 feet, so Major Smith went out at 7000 feet to intercept it. The enemy plane, an Irving bomber, ducked into cloud cover, hoping to evade the Black Widow.

But Lieutenant Porter kept contact with the Jap with the RADAR equipment, and Major Smith closed in. At 1000 feet the Black Widow's cannon opened up on the Irving, which retaliated with a 20-mm. tail gun. Smith got in a prolonged burst at 1500 feet, and the Jap fell flaming into the sea.

On the patrol again, the RADAR picked up another Irving coming toward the convoy. Major Smith approached it on a forward quarter at 1500 feet, and having no chance to turn on the Jap's tail he let go a burst of 20-mm. fire while approaching. The second Irving burst into flames and cartwheeled into the sea.

Major Smith went back to his base and refueled, but he had no time to load more ammunition before going out again.

After a ground station located another Jap, the RADAR of "Time's A-Wastin'" picked him up at about five miles away, low over the water. It was so dark that Major Smith had to chase the Jap float plane in circles with the aid of the RADAR before he was able to see it silhouetted against the sky. One burst disintegrated the Jap craft.

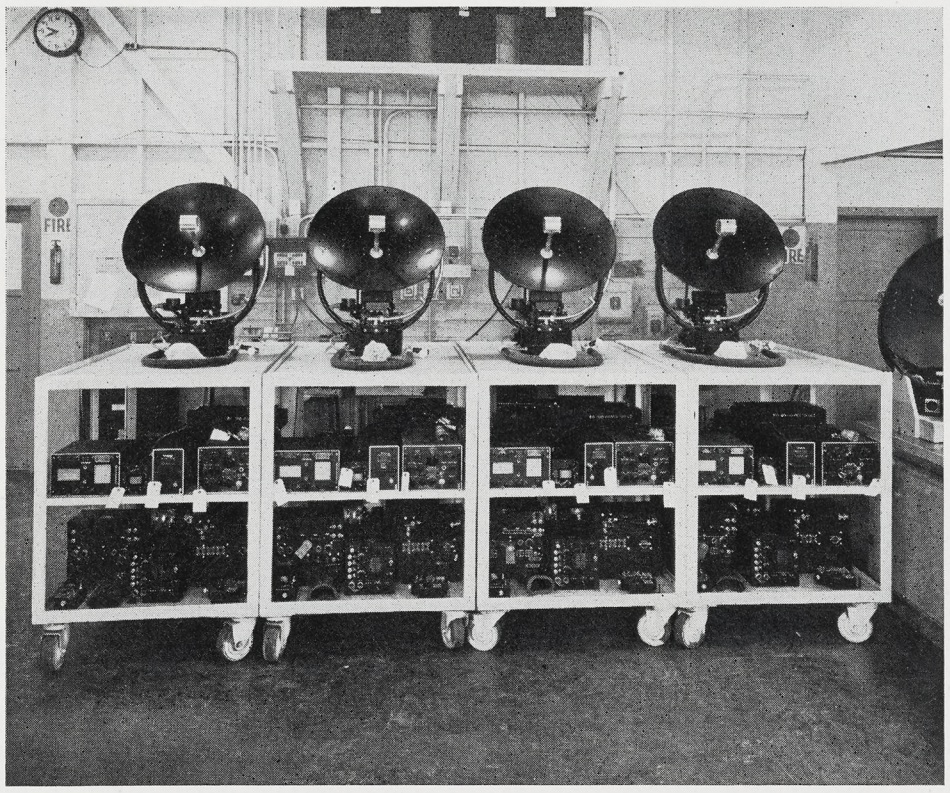
The ground station just before dawn located still another Jap, six miles away and high up. Major Smith climbed his Black Widow, throttle open to the limit. At 4000 feet a Jap Frank made an excellent silhouette as it cruised along, unaware of the approaching death. Smith fired with the cannon at 75 feet, and the Frank blew up.

Major Smith had made night fighting history.

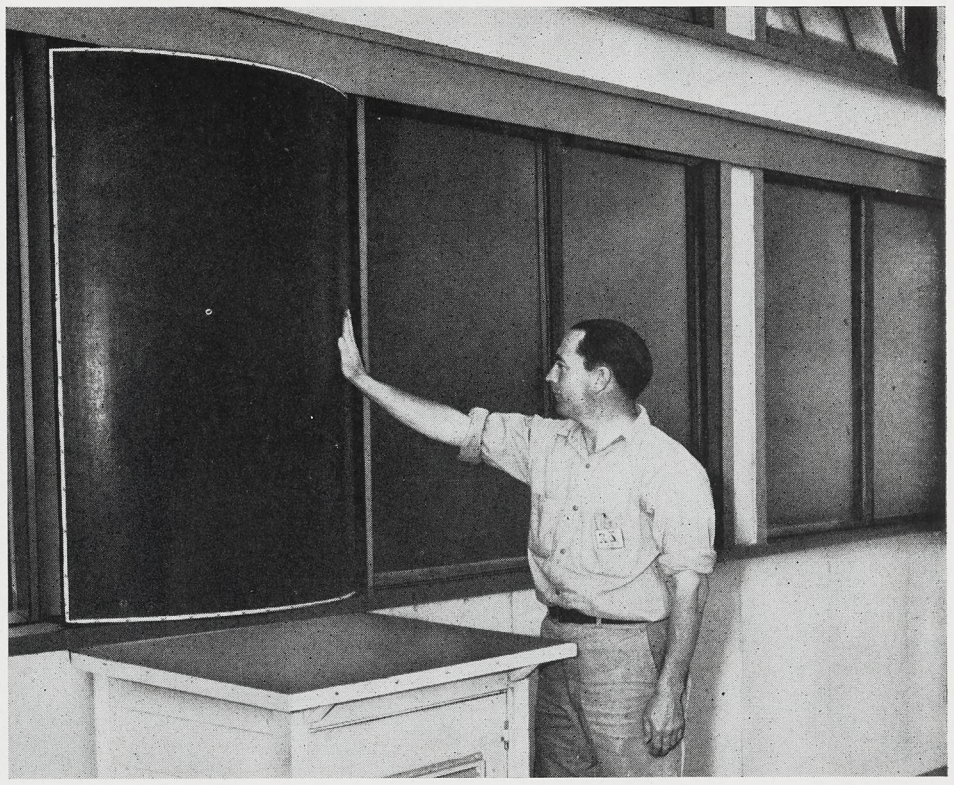
The '61 and her RADAR and her cannon have become a fixture in the AAF. Squadrons are still on active duty overseas and at home.

Aside from fighting, RADAR together with great structural strength has made a thunderstorm research plane out of the P-61. For two seasons now, the Army has compiled information on thunderstorms and thunder clouds, what goes on inside them, and how it feels for an airplane to get struck by lightning—(Northrop service representative Dick Warner at Wright Field says a bolt of lightning makes a small hole in a Black Widow.)

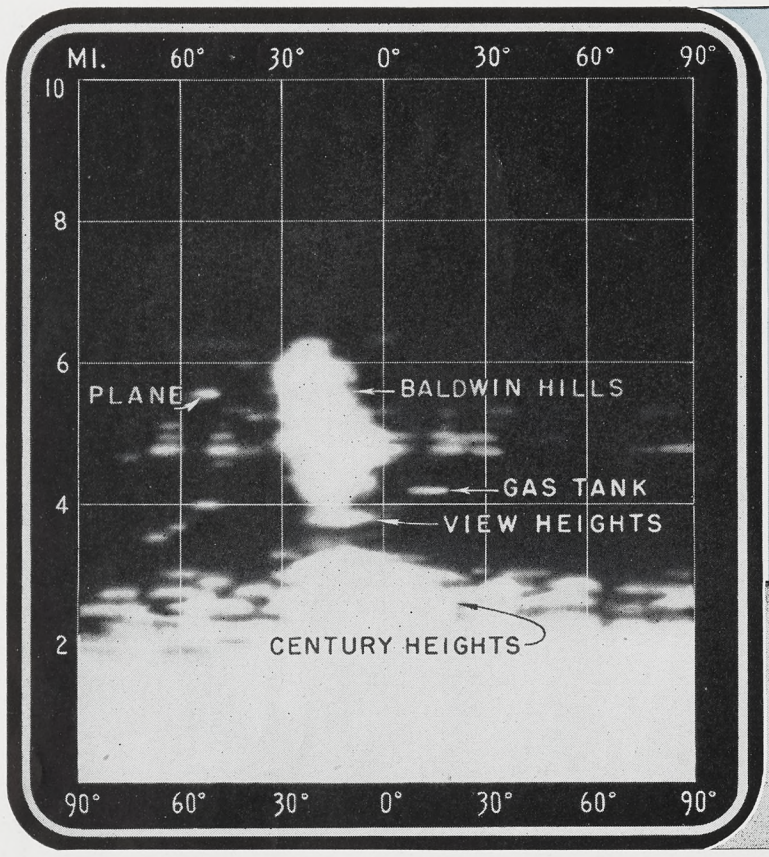
As a flying RADAR laboratory, the '61 has gone far to provide practical information and techniques on the science of navigating commercial aircraft in zero visibility and night flying. The airplane and her "radio," even though the war is long over, are still hard at work—and to date no airplane has been manufactured to take her place.

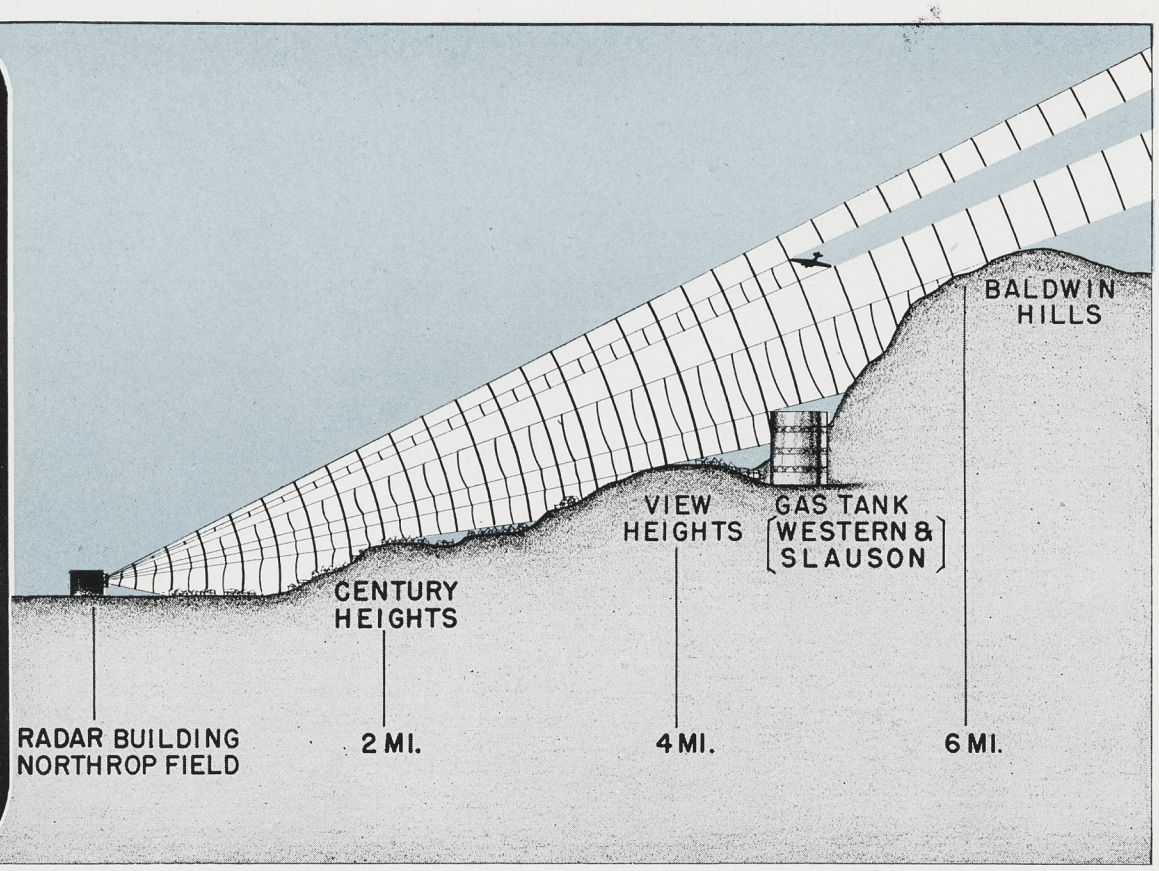


WAR-TIME RADAR SETS CHECKED out and ready for installation, complete with all equipment. Special benches were made to facilitate parts and equipment handling and assembly. From this point the sets were moved to enclosed assembly line area, installed in Widows, zero'd, and checked out to AAF. Radar was highly restricted item for war duration.



ONE OF FAMOUS and mysterious zeroing windows through which RADAR sets were aimed for battle duty calibration. Northrop RADAR man Gilbert Beneze touches glass fibre-board that allowed free passage of waves and echoes, and yet effectively screened top-secret production. Maps of radar wave echoes, page 6, were targets "seen" by radar through this window.

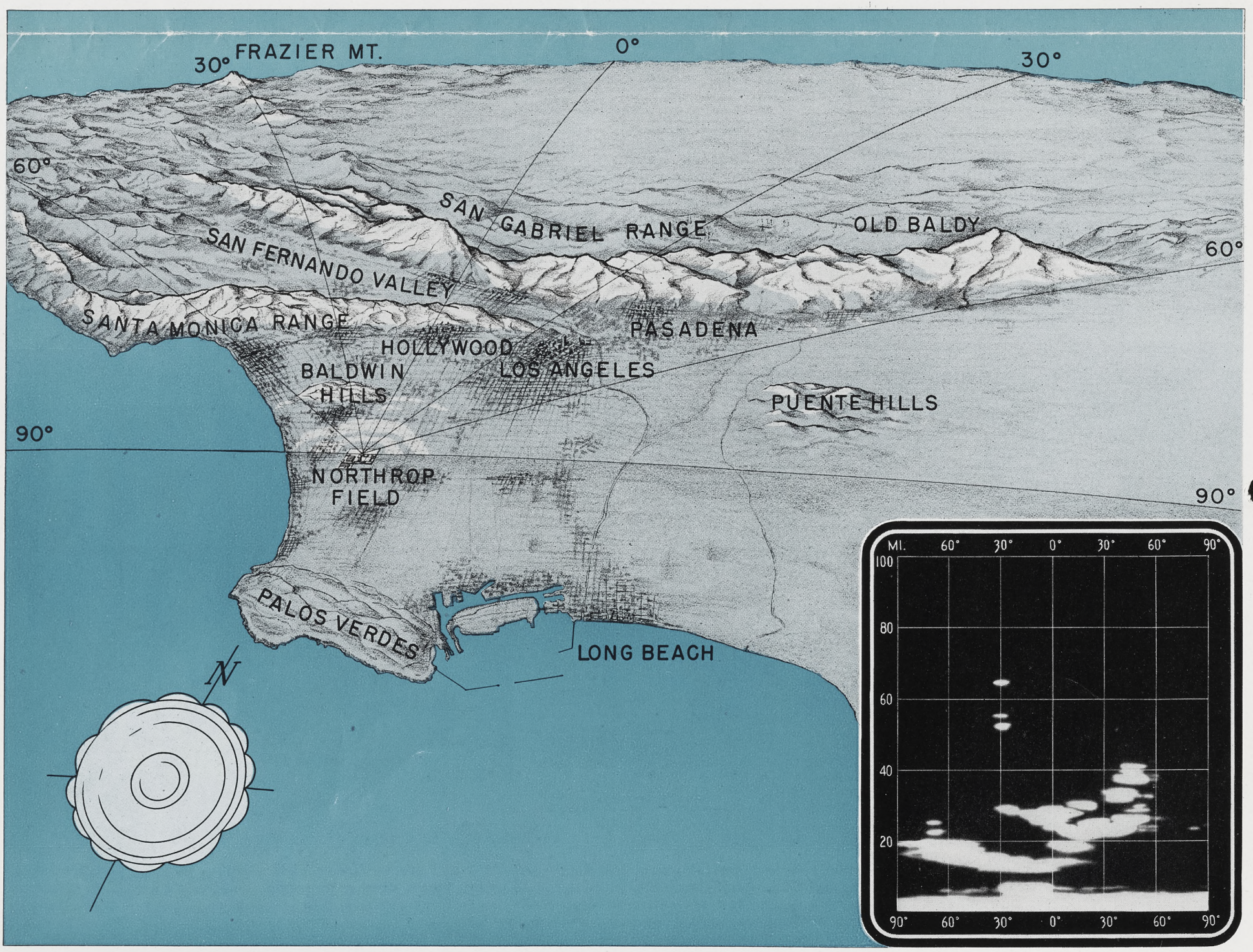




THE RADAR SCOPE IS A GROUND GLASS GRID on which appears, when in operation, white clouds and dots and splotches, called "blips" in RADAR parlance. Above, at left, is shown a RADAR ten-mile view north from Northrop Field's RADAR building. Correlated with the artist's exaggerated cross section of the area, we see that the uppermost cloud area represents the Baldwin Hills six miles away. A plane flies toward Playa Del Rey, to our left. The towering Western Avenue gas tank is a "blip" at right. View Heights and Century Heights are nearby echo masses. White field nearby shows RADAR echoes from field and houses in immediate vicinity. RADAR observers translated screen with astounding accuracy.

(Art work by Harold Pershing, Northrop Illustration Department.)

LONG RANGE RADAR SCOPE lines up airplane for areas subject to intended search. Reader may see from scope picture at right what night flying P-61 pilot sees from south boundary of Northrop Field. Top "blip," sixty-five miles away on 30 degrees, is well-known Frazier Mountain. Fifty-seven miles away on same course, the observer sees Cobblestone and Stewart mountains. To his right, the Sierra Madres blot out the horizon with Old Baldy forty-two miles away at 50 degrees. The Santa Monica range is only twenty miles away, while the Baldwin Hills present the first air hurdle on this hundred-mile RADAR map. White areas on map, all visible in RADAR scope, will assist reader in making his interpretation.



SPORTS

The Northrop News

N. R. C. Good Time Table

For enrollment or further information on activities listed below call Station 637 or visit the Personnel Activities Office, Personnel Activities Building, Plant No. 1 Plaza.

ARCHERY CLUB
Max Stempel, commissioner

Archery Range, NRC Field available for practice, noon lunch periods or before or after work periods. Equipment at NRC Clubhouse. Wednesday afternoons inter-shift practice.

ART CLUB
Paul Nelson, commissioner

Professional models pose for drawing and painting Wednesday, 7:00-10:00 p.m., Camera Club Studio, 3511 W. Hyde Park Boulevard.

BADMINTON
Ed Sellon, commissioner

Meet Thursday evenings, 7:00-10:00 p.m., Dorsey High School Gym.

BOWLING (DAYS)
Mike DeSico, commissioner

Tuesday nights, 7:00 p.m., Windsor Bowl, Handicap League; Tuesday, 6:30 p.m., Royal Bowl, Mixed Foursome; Thursday, 7:00 p.m., Mixed Foursome, El Segundo Bowl; and Friday, 7:00 p.m., 825 Scratch at Hawthorne Bowl.

BOWLING (NIGHTS)
Bob Du Bois, commissioner

Bowl Thursday mornings, 1:30 a.m., Inglewood Sports Center, Handicap League.

BRIDGE CLUB
A. S. (Bud) Bowser, commissioner

Playing meetings each Wednesday night, 7:30 p.m., Veterans of Foreign Wars Auxiliary Hall located at 417 West 131st Street, Hawthorne.

CAMERA CLUB (DAYS)
John Cummins, commissioner

Next meeting Friday, December 5, 8:00 p.m., Camera Clubhouse, 3511 Hyde Park Blvd. Program is annual color competition. Visitors welcome.

CHECKER CLUB

Checker Tournament finals being played during lunch periods, Plants One and Three.

CIVIL AIR PATROL
A. H. Anderson, commissioner

Meetings each Tuesday night at Auxiliary Hall, 417 West 131st Street, Hawthorne. Squadron meetings, 7:30 p.m., followed by group meetings, 8:15 p.m. All Norcrafters invited.

CRIBBAGE

Cribbage Tournament being played Plant One, night shift lunch period.

FLYING CLUB
(Northrop Flying Association)
Ralph Bent, commissioner

Memberships available. Call Personnel Activities for information. Book flight time at Torrance Airport by telephone —FRontier 4-3604.

GLEE CLUB
Paul Tompkins, commissioner

Meets Tuesday evenings, 7:30 p.m., Hawthorne Women's Club, 331 Birch, Hawthorne. A big Northrop Junior Christmas program is being planned. All Norcrafters invited.

GLIDER CLUB
Gordon Blaisdell, commissioner

Meets every Monday evening at 7:30 p.m., Plant One Cafeteria. All Norcrafters invited.

GUN CLUB
William LeMaster, commissioner

N.R.C. Gun Club members compete each Sunday at the Alhambra Police Range. Firing begins 9:00 a.m.

NORTHROP JUNIORS

Boys meet each Saturday morning from 9:00 to 12:00 on N.R.C. Field. Ages 9 to 16 are welcome.

PHILATELIC CLUB
Nathan Kates, commissioner

Next meeting, Monday, December 15, 7:30 p.m., Hawthorne Women's Club, 331 Birch, Hawthorne.

SEA SCOUTS
George Metzger, commissioner

Meet each Wednesday, Boxing Ring, N.R.C. Field, 7:00 p.m.

SKI CLUB
Cecil Cruzon, commissioner

"High Sierra Rendezvous of 1947." December 27, 28 and 29, at Glacier Lodge. Reservations with a $5.00 deposit to be in Personnel Activities by Friday, December 5.

STAGECRAFT

First meeting, 7:30 p.m., Monday, December 15, N.R.C. "Little Theatre," 417 W. 131st Street, Hawthorne.

THEATRE TICKETS

Tickets to all stellar attractions available at Personnel Activities Office through Mutual Theatre Ticket Branch Office.

WEIGHTLIFTING
Bill Robusch, commissioner

Los Angeles Weightlifting championships and "Mr. Los Angeles" contest, Saturday, December 6, 7:00 p.m., Embassy Auditorium, 847 South Grand Avenue, Los Angeles.

Stagecraft Club Meets Dec. 15th

Norcrafters who have that "flare" for footlights—actors, actresses, stagehands—will be called together for their first NRC-sponsored club meeting on Monday evening, December 15 at 7:30 p. m. at the NRC's "Little Theatre" at 417 West 131 Street, Hawthorne.

During this first meet, NRC president Roy Wolford, who will preside, has announced that a temporary Stagecraft commissioner will be appointed. The stagecraft meetings will be conducted in the "lingo" of the theatre at all times. Classes will be conducted in the fundamentals of drama and stagecraft in all their phases. Plans will be discussed to launch production of stage plays and skits for the entertainment of members and other interested Norcrafters.

All Norcrafters are eligible for membership in this newest of the NRC's "57 varieties" of activities.

BOWLING ALONG
by Mike DeSico

The Tuesday night Handicap Bowling League finds 6 teams fighting for first place. The Supers jumped to a tie for first by taking two games from the leaders. The Timber Toppers upset the Toolers for two games. Talk about scores, last Tuesday they were high and plenty. M. Misko came through with a 621 scratch series, Joe Sokolich with 608 scratch and Jack Meehan with a 583 scratch series. Bob Willson had a 225 game and a 568 scratch series. Cecil Callaway came through with a first game of 230. Wes Carr had a 221 game. P. Saunders had a 222 game and 592 scratch series. Those scores sound like the Major Classic League of Los Angeles. Timber Toppers took weekly high team series with 2906 and the Fifty-niners took high team game with 1034.

NORTHROP TUESDAY NIGHT HANDICAP BOWLING LEAGUE WINDSOR HILLS BOWL

Team	Won	Lost
Ohm Bugs	20	10
Supers	19	11
Toolers	18	12
Jigs-up	16	14
Fickle Flingers	16	14
Thirty-niners	16	14

The 825 Scratch League finds the Flaming Devils still holding first place by three games. Lennie Muellich and Elmer Lohry are the spark plugs of this team, each showing an average of 177. Nice going, boys. Hancock won weekly individual high game with 224, Luckees won high team series with 2564 and the Flaming Devils took weekly high team game with 887. Philip Tripoli is still top man with a 185 average. Joe Sokolich, after a bad start, is steadily climbing—he gained 10 pins in average in the last three weeks, now sporting 177, but not like his Tuesday night average, which is 188.

NORTHROP 825 SCRATCH BOWLING LEAGUE, FRIDAY NIGHTS HAWTHORNE BOWLING CLUB

Team	Won	Lost
Flaming Devils	19	8
Luckees	16	11
Lucky Strikes	15	12
Tooling Mites	14	13
Woodchoppers	14	13
Feeble Five	13	14

The Mixed Foursome League on Thursday nights find the Four Drips and the Termites battling for first place. Tommy Williams of the Four Drips has the highest average in the league, a 170. Frances Klobucar of the Singleton's team is highest of the girls with 136.

NORTHROP MIXED FOURSOME HANDICAP BOWLING LEAGUE ROSE BOWL, EL SEGUNDO

Team	Won	Lost
Four Drips	16	8
Termites	16	8
Alley Masters	14	10
Double Dribbles	12	12

NORTHROP ENGINEERING MIXED FOURSOME

Team	Won	Lost
Fuddled Five	25	11
Ginny's Fizzes	23	13
Gilligalukes	22	14
Double Daters	22	14
Four Bits	18	18
T-Wins	16	20

Northrop Engineering Handicap League have completed eleven weeks of bowling, find the Voodoo's on top by three games, being pressed by the Pathfinders and Five Flushers. Jimmie Stewart has bowled the highest scratch series, 581, and Bowman has the highest individual game of 238.

NORTHROP ENGINEERING HANDICAP LEAGUE MORNINGSIDE RECREATION

Team	Won	Lost
Voo-Doos	27	17
Five Flushers	24	20
Pathfinders	24	20
Tops	24	20
Guided Muscles	23	21
Pins-up	23	21
Triskaidekaphobia	23	21
Stew's Stoops	22	22
Pin Snatchers	21	23
Rusty Gates	21	23

New Locations Announced for NRC Club Meetings

Two new additions have been added to the NRC Clubhouse family where a few of the many NRC sponsored activities will hold forth now that the Plant One Cafeteria is open for the use of the night shift personnel during their lunch periods.

The NRC Philatelic Society (Stamp Club) moved to new quarters at 331 Birch on Monday, December 1, followed by the newly organized Glee Club, who took over on Tuesday, December 2. This address is the Hawthorne Women's Club and has been temporarily leased to the Northrop Recreation Club for evening meeting activities.

Moving a few short blocks to 131st Street on top of the hill overlooking the town, on every first and third Monday of the month, starting December 15, you will find the NRC Stagecraft Club rehearsing their theatricals in the NRC "Little Theatre". On the following evening, the Seventh Group, California Wing, Northrop unit of the Civil Air Patrol, opens the door at 7:30 p. m. for their every Tuesday-of-the-month get-together.

A set of brand new keys has been presented to Bud Bowser, NRC Commissioner of the Bridge Club, for the same location, and every Wednesday, starting December 3, Bud will be at the door welcoming NRC bridge players to their new home.

Both of the newly acquired Clubhouses have fully equipped kitchens in connection at the disposal of the NRC groups on meeting nights. Activities are planning coffee and socials at the close of meetings for hearthside get-together spirit during the winter months.

Glider Club to Desert For Flights

The Northrop Glider Club membership will journey to Rosamond Dry Lake on Saturday, December 6, for a day of sailplaning and glider flight demonstrations, it has been announced by Gordon Blaisdell, president of the newly activated Northrop Glider Club.

This meeting, to which all Northrop glider enthusiasts, whether novice or expert, have been invited, will continue throughout the day, being highlighted by demonstration flights of the soon-to-be-purchased club sailplane. Walter White, of the Northrop Aeronautical Institute, present owner of the craft, will conduct the demonstration. Club members, Art Russo and Joe Silveira will also make flights in their own privately-owned gliders throughout the day.

Rosamond Dry Lake is approximately 90 miles from Los Angeles. It is situated east of Palmdale.

All Norcrafters interested in attending this glider meet should contact Personnel Activities on Station 637 for full information. Those lacking transportation will receive assistance from the club's car pooling facilities.

Ski Club

(Continued from page 1)

general impromptu entertainment.

Reservations accompanied by a $5.00 deposit should be in Personnel Activities office by Friday, December 5, day after tomorrow. Commissioner Cruzon urges that those intending to make the trip should make their reservations early to insure accommodations. The season promises heavy attendance at the Lodge during the holidays. Total price for accommodations at Glacier Lodge for the 3-day rendezvous will be $15.00, $5.00 per day, American plan. Meals are furnished. Car pool arrangements are now being effected to accommodate those Norcrafters without High Sierra transportation.

A few tips for you to remember about this trip:

1. Get anti-freeze in the city if you plan to drive while there.
2. Have chains along and a shovel in your car.
3. Bring at least one good pair of snow goggles or sun glasses.
4. Share the ride with someone—call extension 637 for transportation notes.
5. Bring water-proof jacket and warm enough clothing.

Camera Club Starts Clean-up Paint-up Week

The NRC Camera Club reports that in the staging of their November Print-of-the-Month competition November 21, Walt Darby of Aerodynamics proved that his winning streak "has something." Walt has chalked up three wins in a row to date. On Friday he took first prize in Class B. He had previously taken first prize in the October Print-of-the-Month competition and the October 31 color contest. Don Keep took second and third November Print - of - the - Month prizes. Paul Streib and Duane Morlan took fourth and fifth respectively. In the Class A division John "Mac" McCue walked off with first and second prizes. John Cummins, commissioner, took third. Host and hostess at this meeting were Val Harris and Evelyn Lewis.

The Club's clean-up campaign got under way Saturday November 22 when Don and Edna Keep, Bob McPherson, Walt Clark, John McCue, Vic Boetel and Bob Morris rolled up their sleeves, grabbed buckets and mops and earned themselves general all-around orchids and cheers via the elbow grease route. Chuck's super-duper double decker hamburgers and coffee relieved the tedium of the day for one and all concerned.

NRC Side Lights

By Roy Wolford
President, Northrop Recreation Club

During the past few months the NRC new club activity has reached an all-time high. It seems that folks are beginning to realize the value of association through sports, hobbies and cultural activities. The expansion of the NRC club memberships and new clubs amounts to something that approaches the phenomenal.

Roy Wolford

Beginning in April the Bridge Club, Bud Bowser, commissioner, led off the 1947 new club parade. Since that time the list has extended to include the night shift Camera Club (reactiviated), Howard Converse, commissioner; the Glee Club, Paul Tompkins, commissioner; the Glider Club, Gordon Blaisdel, commissioner; Philatelic Club, Nathan Kates, commissioner; the Riding Club, temporary commissioner to be appointed and Stagecraft, temporary commissioner to be appointed.

This gives the NRC official body a great deal of satisfaction. The only way we can judge our 1947 NRC adminstration is by the results shown and these results are, and we say this in all modesty, outstanding. It gives us, also, a great deal of satisfaction to know that when Norcrafters think sports, hobbies and cultural activities, they think also, in the same breath so to speak, NRC. I would like to take this opportunity to extend pre year-end best wishes to the juniors members of the NRC. May their activities have long and continued success.

The NRC night shift Camera Club is off to a fast start, according to Howard Converse, commissioner. The night-time shutter flutterers plan to meet Friday night, December 5 after work at the camera clubhouse, 3511 Hyde Park Boulevard. The meeting will be featured by color slide showings.

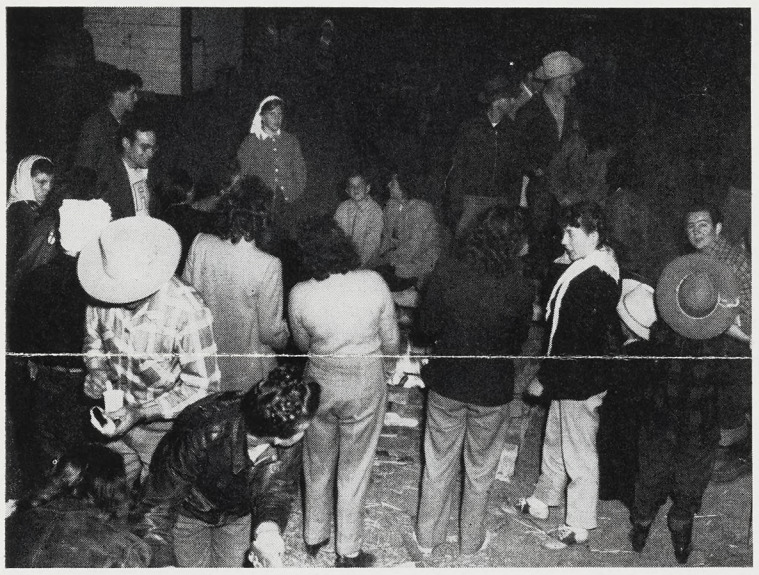
Also announced for the night shift Camera Club are photo contests, in black and white and in color, the theme being Christmas decorations. Such subjects as street scenes, decorated trees or your own home in the holiday spirit will qualify. The contest closes January 9. Winners will be announced two weeks later. Prizes will be donated by the NRC. All Norcrafters are eligible.

NRC Glee Club makes debut —the NRC's traditional Christmas Party for Northrop Juniors. the details of which you will read elsewhere in these pages, marks the first public appearance of the NRC Glee Club. The Glee Club folks, 30 strong, will sing Silent Night, White Christmas, Adeste Fidelis and a hit tune from the Wing Dings' Winter Song. Northrop Juniors and their folks who attend this Christmas Party are in for a treat in the way of Glee Club entertainment.

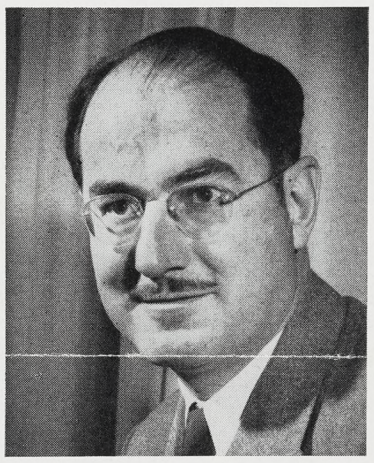
THE Northrop Scene BY DAY AND NIGHT

NRC Riding Club Holds First Meeting

THE NRC RIDING CLUB RIDES. Shown above a portion of some 30-odd Norcrafters who turned out for the first NRC Riding Club meet on Friday, November 21 at Bud's Stables, 145th and Inglewood Avenue, Hawthorne. NRC President Roy Wolford presided over the gathering and played NRC host to the tune of hot dogs and coffee a la branding-fire weinie roast to the entire crowd of "old Northrop cowhands."



NRC RIDING CLUB FOLKS gather around the branding fire to partake of hot dogs, coffee and cake via the genial hosting of NRC President Roy Wolford. Enthusiasm for this first Riding Club meet has been graphically illustrated by the fact that more of the same is strictly in order. Come on out and try that evening gallop.



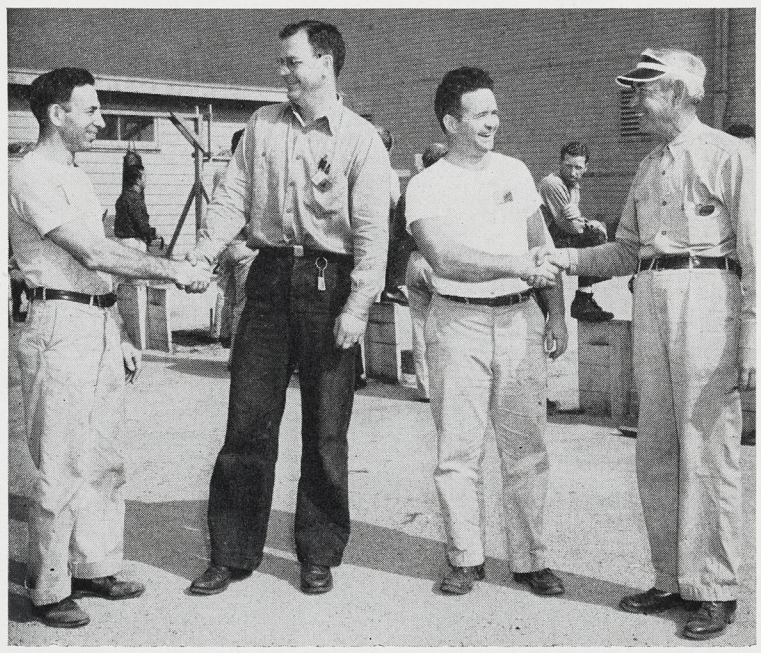
WE HAVE THE HONOR to present Gordon Blaisdell, president of the new Northrop Glider Club. Gordon, Engineering Structures group, first flew a sailplane in 1929, giving him, up to now, 18 years as a glider pilot. Aside from being president of the Glider Club, Gordon represents birdmen affairs to the NRC. Glad to meet you Gordon!

Year-End Vacation Time

33 55

NORCRAFTERS' HOLIDAY VACATION TIME IS HERE AGAIN. Photographer pauses to record scene typical of Northrop Aircraft this past week. Plant One Norcrafters from left S. W. Searing, Wally Kuegeman, Dick Bartlett, S. A. Berg, E. J. Bueltel, Ed LaCourse, W. J. Siddal and Ralph Parker, gather during noon lunch period to check details of recently posted vacation bulletin announcing an eleven-day year-end holiday beginning at the end of shifts December 24, 1947, and ending at regular "start to work" starting time Monday morning, January 5, 1947—well, what are we waiting for?

Horseshoe Champs



PLANT HORSESHOE CHAMPS SHAKE HANDS with runners-up after a grueling barnyard golf tourney. Charles Beuchet and Bob Higgins, second and third left respectively, winning team, Crenshaw, pass out condolences to Plant One second place men Ed Mann, left, and Charles Hoyt, right. The tourney covered six weeks of ringer pitching.

ABOVE, PHOTO MAN RECORDS ceremony wherein "Butch" Graham, Northrop Open Golf champ receives laurels for NRC open golf tourney win. Other Northrop golf greats in photo are from left, Bill Clark, winner second flight; Bill Robusch, NRC vice-president, doing the honors; Graham; Ash Dunning, NRC golf commissioner, Ernie Underwood, runner-up first flight and Mel Larson runner-up championship flight.

NEW NORCRAFTERS ARE INTRODUCED to the Northrop News—Marvin Gaut, Department 25 department head explains recently inaugurated Northrop News service to new Norcrafters wherein the News is forwarded by departmental mail to new starts, assuring quick introduction to what's latest in news at Northrop Field. Others in photo from left are Janie Wheeler, Margie Martin and Nell Crenshaw, Department 25 clerks.